the view that the "crape" ring is really a dark ring, as the following quotation from his paper proves beyond doubt:—"I then attributed," he says, "the phenomenon" (narrowing of the "dark" ring at lesser axis) "to an effect of irradiation of the light of *Saturn's* globe overstepping the material particles composing the border of this ring. Although it might be probable that irradiation must cause a reduction in the diameter of the particles of the ring projected on the globe, I now think, however, that the phenomenon just described results from another cause." As irradiation is capable of affecting the diameter of dark bodies only when put in juxtaposition with a bright one, M. Trouvelot obviously considered the particles of the "crape" ring to be darker than the globe. But then, without irradiation, the segment a_1a_2 in the preceding figure ought to be dark, not bright as the planet, as Dawes actually saw it. And thus M. Trouvelot's interpretation is shown to be in opposition to observation.

Irradiation doubtless affects the breadth of the shadow cast on the globe by the "crape" ring, but to a slight extent only, as the intensity of such shadow is also slight. Inasmuch, however, as the luminosity of the planet is greatest about its centre, waning very rapidly towards the limb, the effect due to irradiation would not be uniform, attaining its maximum at the minor axis, its minimum in the vicinity of the limbs, a circumstance which would tend to exaggerate the apparent concavity of the shadow's outline with regard to the centre of *Saturn*.

Observations of the Satellite of Neptune from Photographs taken at the Royal Observatory, Greenwich.

(*Communicated by the Astronomer Royal*).

A number of photographs of Neptune and his satellite (twenty-two in all) have been obtained since December 23 with the Thompson Equatorial, using either the 26-inch refractor or the 30-inch reflector. From January 26 an occulting shutter immediately in front of the plate has been used to screen the planet during the greater part of the long exposure on the satellite, a series of very short exposures (usually twenty of one second each) being given for Neptune at regular intervals (usually each minute) by lifting the occulting arm. In this way small well-defined images of Neptune in combination with distinct images of the satellite have been obtained, the photographs admitting of very accurate measurement of the position angle and distance of the satellite. The orientation was determined usually by means of a pair of short exposure images of Neptune, the clock being put out of gear for seven or ten seconds between the exposures to give a convenient displacement in R.A.

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The earlier photographs from December 23 to January 19, ten in number, taken before the adaptation of the occulting shutter, were found not to admit of such accurate measurement, and they have therefore not been included in the series measured. The measures were made with a position-micrometer (formerly used for the measurement of solar photographs), which has been adapted by Mr. Simms to the measurement of position angles and distances on photographs of this class. The photographs were measured in reversed positions of the plate by each of two observers giving four independent sets of results. The mean values of position angle and distance as measured are given in the following table, the tabular positions being computed from the data given in the "Connaissance des Temps," based on Mr. H. Struve's elements, the eccentricity of the orbit being neglected owing to the uncertainty as to the present position of the periastron.

Positions of Neptune's Satellite measured on Photographs taken with the 26-inch Refractor.

Date.				Exposures.	Position Angle			Distance.		
					Observed.	Tabular.	Tab.-Obs.	Observed.	Tabular.	Tab.-Obs.
1899	d	h	m	m s	°	°	°	"	"	"
Jan.	26	9	40	20, 20	283·43	283·05	−0·38	14·02	14·20	+0·18
Feb.	2	7	37	20, 20	241·13	240·02	−1·11	16·15	16·07	−0·08
	17	7	15	17, 20	45·98	46·86	+0·88	14·59	14·51	−0·08
	28	9	46	15, 15	72·51	73·87	+1·36	15·82	16·50	+0·68
Mar.	1	8	35	20, 20	30·04	29·71	−0·33	12·42	12·44	+0·02
	1	9	44	20, 20	26·13	26·44	+0·31	12·07	12·12	+0·05
	2	9	9	20, 20	301·51	300·59	−0·92	11·78	12·01	+0·23
	5	8	47	15, 25	118·07	117·38	−0·69	12·08	12·28	+0·20
	9	8	44	20, 20	247·40	248·53	+1·13	15·96	16·34	+0·38
	10	8	41	25, 20	196·39	195·80	−0·59	10·51	11·21	+0·70
	14	8	55	15, 15	284·45	285·68	+1·23	12·89	13·49	+0·60
	27	9	24	20, 20	231·13	232·34	+1·21	14·70	14·82	+0·12

All the photographs were taken with the occulting shutter, except those on March 1. The orientation for the photographs on January 26, February 2 and 17 was determined from the tabular places of Neptune and a known star (at a distance of 32′, 37′ and 13′ on the three dates respectively). On the other photographs it was found directly from the two images of Neptune displaced in R.A., as explained above.

The accuracy of the measures may be inferred from the following table, showing the discordances of the four independent sets of measures from the mean. The initials C. D. and P. M. are those of Mr. Davidson and Mr. Melotte, each of whom measured in the direct and reversed positions of the plate.

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Satellite of Neptune. Discordances of Measures from Mean.

Date. 1899.	Position Angle.					Distance.				
	C. D.		P. M.		Mean Discord.	C. D.		P. M.		Mean Discord.
	D.	R.	D.	R.		D.	R.	D.	R.	
	°	°	°	°	°	″	″	″	″	″
Jan. 26	+0·1	−0·5	+0·7	−0·3	±·41	+·02	+·06	−·05	−·03	±·04
Feb. 2	+0·1	−0·3	+0·4	−0·2	·27	+·06	−·02	−·09	+·05	·06
17	−0·3	+0·4	−0·2	+0·2	·27	+·11	−·08	−·08	+·04	·08
28	0·0	−0·1	+0·2	−0·1	·11	+·09	−·12	−·15	+·16	·13
Mar. 1	+0·7	−1·6	+0·4	+0·5	·77	+·01	+·09	−·07	−·03	·05
1	−0·1	−0·1	−0·3	+0·4	·22	+·10	−·15	−·18	+·22	·16
2	−0·2	−0·8	−0·1	+1·1	·57	−·07	·00	−·24	+·31	·16
5	−0·8	0·0	−0·3	+1·1	·56	+·13	+·10	−·14	−·13	·13
9	−0·1	+0·1	+0·1	−0·1	·10	−·02	+·04	·00	−·04	·03
10	−0·2	−0·5	+0·6	+0·1	·37	+·36	+·15	−·36	−·15	·26
14	−0·1	+0·1	0·0	0·0	·05	+·37	−·14	−·05	−·18	·19
27	−0·5	+0·1	−0·1	+0·5	±·27	+·16	+·06	−·49	+·26	±·24
					Mean ±·33°					Mean ±·13″

Notes.

Feb. 28, image of planet elongated; Mar. 1, occulting shutter not used; Mar. 2, image of satellite elongated; Mar. 5, satellite ill defined; Mar. 10, satellite within luminosity from Neptune.

Royal Observatory, Greenwich:
1899, *May* 12.

Observations of Swift's Comet, 1899, *made at Grahamstown, South Africa.* By Major L. A. Eddie.

The first news of the discovery of this comet by Swift reached us on March 10, but, owing to the prevailing cloudy skies of this very droughty season, I was unable to make a search for the comet till March 13, when a partial clearance of the sky permitted me to sweep for it. I soon picked it up in the 9¼-inch reflector about 8 o'clock P.M. Cape uniform time. I found it fairly large and bright, of a very undefined outline, but considerably condensed in the centre, though showing no stellar nucleus or defined cometic envelopes. It was very fluffy and extremely ragged, with woolly protuberances on its northern edge, and possessed a faint, but long, straight tail, proceeding from an